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SECTION OF ANATOMY.

International Medical Congress 1881

INAUGURAL ADDRESS.

"*The Museum of the Royal College of Surgeons of England.*"

BY THE PRESIDENT OF THE SECTION,

PROFESSOR W. H. FLOWER, LL.D., F.R.S., F.R.C.S., &c.

WHILE thinking over various subjects for an address with which to open the business of the Section over which I have the honour to preside, it has occurred to me that the time which has been allotted by the arrangements of the Congress for the purpose, may be made most useful to my hearers, if instead of entering upon a discussion of any abstract question, I were to ask your attention to a subject upon which I may possibly be able to give a little information of practical use to members of the Congress during their visit to this city.

No class of persons can appreciate so fully the importance and value of Museums as those whose occupation it is to study the form and relations of the various parts of the body, whether of plants, animals, or man.

Our science would make little progress if the objects of our inquiries, once used for examination or description, were then thrown aside, and those coming after were denied the opportunity of which we have availed ourselves. A Museum is a register, in a permanent form, of facts, suitable for examination, verification, and comparison one with another.

Hence, ever since serious attention has been awakened to the interest of anatomical studies, Museums have always been important adjuncts to their successful prosecution, and the preservation of the various structures of the body has occupied the attention of very many anatomists, since the time of the great Italian teachers of the early part of the seventeenth century, with whom apparently the art commenced.

We have in London, as you are all aware, a Museum which stands, in some respects, in a peculiar position, differing perhaps from any in the world in its origin, its scope, its method of maintenance, and its relation to the profession and to the State, in which, for very nearly twenty years, it has been my privilege to pass my days. It has occurred to me that a few words in explanation of the history, arrangement, and contents of that Museum, might add to the interest and profit of those visits which I trust every one here will find time to pay to it during the meeting of the Congress.

The great mind of John Hunter, far in advance of his age—and, it may be, even of ours—saw at one glance the vast importance of biological science, and the best means to further its pursuit. To this end he founded his Museum, and directed by his will that it should always be maintained in its integrity. Wherever civilized men are gathered together, there are now minds who feel what Hunter felt. The necessities of such minds have created in every country in Europe, and the enlightened parts of the New World, Museums designed to serve in their different degrees the same functions as our Hunterian collection. Such Museums are evidently national needs; they have already come, though not by any means to the extent they will in future come, to be looked upon as an essential portion of the educational machinery of the State. Such Museums are, in almost every capital of Europe, supported directly at the expense of the State, or are connected with some great educational institution dependent upon Government for aid. In England alone, the need has been supplied first by a private individual, and secondly by a private, or semi-private institution, composed of members of a single profession, with only occasional assistance from the State. In this country the State (and therefore every individual composing it), is indebted to John Hunter and the Royal College of Surgeons for relieving it of the burden which must otherwise have fallen upon it, of providing that portion of the national education afforded by a biological Museum.

The period occupied by John Hunter in the formation of his collection was all comprised between thirty years—1763, the date of his return from service with the army in Portugal, and 1793, that of his death. The labour which he accomplished during this time was something prodigious, as has often been recounted in various biographies, and Hunterian "orations." Notwithstanding all that has been written and said, it is impossible to do justice to his wonderful activity and industry. In nothing, however, were these qualities so conspicuous as in the formation of his Museum.

Public Museums at that time scarcely existed. The British Museum was little more than a library and gallery of art; the small cabinet of natural history, reinforced by the old collection of the Royal Society, scarcely made any show. Anatomical specimens, even bones and teeth, were looked upon with disfavour. Some that had accidentally found their way into the collection were, even within the present century, treated as intruders, and turned out without much ceremony.

Teachers of anatomy were forming their own private collections, but these were all eclipsed by those of the two Hunters, William and John. That of the latter especially grew to such an extent as to become in some sort a national and public institution. He built a large room to contain it in Castle Street, at the back of his house in Leicester Square, and when finally arranged there, so much interest was taken in it that he found it necessary to open it to public inspection at certain stated times. Still it was maintained entirely at his own cost, and it is stated that by the time of his death he had spent upwards of £70,000 upon it. Whether this estimate be correct or not, his expenditure on it must have been very great, as though he had for many years made one of the largest professional incomes in London, his Museum was the sole property he left behind.

John Hunter was a very miscellaneous collector—minerals, coins, pictures, ancient coats of mail, weapons of various dates and nations, and other so-called "articles of *vertu*" engaged his attention. These, however, and his furniture and books, had to be sold to meet the most pressing needs of the family. What would be now called the "biological" part of his collection was kept intact, during the six years which elapsed between his death and its purchase by the English Government in 1799. The preservation of the collection during this period is mainly due to the devotion of William Clift, Hunter's last assistant, whose services were retained for this purpose at a very small salary by the executors, Sir Everard Home and Dr. Matthew Baillie, and whose fidelity was rewarded by his being appointed the first "Conservator" of the collection after it came into the possession of the College of Surgeons.

The story of the negotiations with a Government whose interests and energies were then concentrated upon the great Continental war, and the answer of the Prime Minister Pitt, when applied to on the subject, "What! buy preparations! Why, I have not money enough for gunpowder," are well known. These difficulties were, however, overcome, and on the recommendation of a Committee of the House of Commons appointed to inquire into the subject, the sum agreed to by the executors, viz., £15,000, was voted for its purchase on the 13th of June, 1799. Then came the question what was to be done with it. There was at that time no department of Government under the care of which such a collection could be placed. The condition of the British Museum has been already alluded to. The now flourishing and all-absorbing "department of science and art" had not been invented. There was one body in London which might be supposed to have some special interest in the maintenance of such a collection—the venerable and dignified College of Physicians—but that body, it is commonly reported, demurred to accept it on the ground of want of funds to meet the annual expense of its maintenance. With reference to this report, Dr. Pitman has been kind enough, in response to my inquiries, to examine the archives of the College, and finds that there is no record of any such offer having been made or refused. If any negotiations were entered into, they must, therefore, have been of a purely informal nature.

There was still another corporate body—a comparatively obscure one at that time—the Corporation of Surgeons, which had only separated itself some fifty-four years before from the old City Company of Barbers and Surgeons,* and although it had thrown off the connection which restrained its members from assuming the position of cultivators of a iberal profession, it had as yet done little to raise itself in public estimation, and had ew resources from which to provide for the expenses of such a collection. Nevertheless, the Court of the Corporation determined by an unanimous vote on December 23, 1799, to accept the Museum on the terms proposed by the Government, and almost simultaneously, obtained a new charter, under which they became "The Royal College of Surgeons," a body accredited by Government to examine all persons wishing to practice surgery in the kingdom, and migrated from their old quarters in the City to the house in Lincoln's Inn Fields, round which the present establishment has grown up.

Thus John Hunter's Museum, and the College of Surgeons of England, though of entirely independent origin, have had their fortunes inextricably intermixed, since the former became national property, and the latter took the title and position it now holds.

The College is still the principal examining body for those who practise surgery throughout the kingdom. It takes no part directly in professional education, though it exercises a considerable indirect influence by the manner of conducting its examinations, and by the curriculum it requires from candidates. Its revenues are mainly derived from the fees paid for the diplomas which it grants, which, for the last ten years, have averaged 83 a year. In former times these fees considerably exceeded the expenses of the comparatively slight examination required from candidates, and the surplus, besides defraying the current expenses of the Museum and Library, was devoted to the erection of the present buildings, and the acquisition of the freehold property and invested capital of the College. It says much for the personal disinterestedness of the eminent members of the surgical profession who have constituted the Court of Examiners, and who, until very lately, were practically the ruling body of the College, that they fixed their own remuneration at so low a rate as to permit an expenditure during the present century upon the purposes just indicated, of a sum which cannot be estimated at less than £400,000. Now, owing to the more searching and practical character of the examinations, the expenses of conducting them have augmented to such an extent as to be scarcely more than covered by the payments of the candidates; and but for the proceeds of the investments made under different circumstances, the College would not have the means of carrying on the scientific work it has undertaken.

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* By an Act of Parliament, passed in the 18th year of the reign of George II., intitled, "An Act or making the Surgeons of London, and the Barbers of London, two separate and distinct Corporaions," it was enacted that the union and incorporation of the Barbers and Surgeons of London, made by the Act of the 32nd year of King Henry VIII., should from and after the 24th day of June, 1745, be dissolved, and that such of the members of the said united Company who were Freemen of the said Company, and admitted and approved Surgeons, within the Rules of the said Company, and their successors, should from thenceforth be made a separate and distinct Body Cororate and Commonalty Perpetual, which at all times thereafter were to be called by the name of The Master, Governors, and Commonalty of the Art and Science of Surgeons of London." The rst Charter of the Company dates from the first year of the reign of King Edward IV. (A.D. 1461.

The various professorships and lectureships that are attached to the College have grown up chiefly in consequence of one of the conditions under which the Hunterian Collection was entrusted to it by Government—that a course of no less than twenty-four lectures shall be delivered annually by some member of the College upon comparative anatomy and other subjects, illustrated by the preparations. Other lectureships have been founded by private benefactions, but these are of limited number, or on special subjects, and are intended, not so much for the education of students, but rather as the means of introducing new discoveries or ideas to members of the profession and others interested in scientific pursuits, to all of whom they are freely open without payment.

Besides the Museum, the College has added to its means of benefitting its own members and the profession generally, a library containing every important work and periodical upon surgery, medicine, anatomy, and the collateral sciences.

During the first six years after the collection came into the possession of the College, it remained in the gallery in Castle Street, which had been built by Hunter for its reception; but in 1806, the lease of the premises having expired, it was removed temporarily to a house in Lincoln's Inn Fields, adjoining the College of Surgeons, while the building in which it was destined to be lodged was preparing for its reception. This building, towards the erection of which, Parliament contributed the sum of £27,500, was completed and first opened to visitors in 1813.

The Museum was greatly enlarged entirely at the expense of the College in 1835, and a still more important addition, that of the great Eastern hall, was completed in 1855. Towards the expense of this, Parliament contributed a further grant of £15,000, the whole of the rest of the expenses of the purchase of the site, the building and the annual maintenance of the Museum, having been borne by the College.

In accepting the Hunterian Collection, the College of Surgeons undertook a heavy responsibility, weightier perhaps than was contemplated at the time. Although not required by the letter of the contract to do more than preserve Hunter's specimens, the College undertook the charge in the spirit of the founder, and thus made itself responsible for maintaining such a collection as should meet the requirements of the ever-expanding and vigorous young science to which it ministers. Hunter's collection was held to be the nucleus of a national biological Museum, and its preservation and augmentation by the College has certainly prevented the formation of such a collection by the State.

Hunter was no specialist, and even after eliminating the non-biological subjects before alluded to, a very miscellaneous collection remained; illustrations of life in all its aspects, in health and in disease; specimens of botany, zoology, palæontology, anatomy, physiology, and every branch of pathology; preparations made according to all the methods then known; stuffed birds, mammals and reptiles, fossils, dried shells, corals, insects and plants; bones and articulated skeletons; injected, dried and varnished vascular preparations; dried preparations of hollow viscera; mercurial injections, dried and in spirit; vermilion injections; dissected preparations in spirit of both vegetable and animal structures, natural and morbid; undissected animals in spirit, showing external form, or awaiting leisure for examination; calculi and various animal concretions; even a collection of microscopic objects, prepared by one of the earliest English histologists, W. Hewson.

It is very difficult to compare the present Hunterian Museum, as it is still often called, although officially only recognized as the Museum of the Royal College of Surgeons of England, with any other existing collection, as its nature and the character of its contents have been determined by several accidental circumstances rather than by any very settled purpose. Originally a private collection, embracing a large variety of objects, it has been carried on and increased upon much the same plan as that designed by the founder, with modifications only to suit some of the requirements of advancing knowledge. The only portions of Hunter's biological collection which has been actually parted with, are the stuffed birds and beasts, which, with the sanction of the trustees, appointed by Government to see that the College performs its part of the contract as custodians of the collection, were transferred to the British Museum, and a considerable number of dried vascular preparations, which having become useless in consequence of the deterioration in their condition, resulting from age and decay, have been replaced by others preserved by better methods. Of the various departments of which the Museum now consists, very few, in fact only the collection of illustrations of skin diseases, and the collection of surgical instruments, are not the direct continuation of series founded by John Hunter.

To find an analogous institution to the Museum of the College of Surgeons, in Paris for instance, we should have to combine the collections of Comparative Anatomy and Anthropology at the *Jardin des Plantes*, and even a portion of the separate palæontological collection at that establishment, the collection of human anatomy of the *Musée Orfila*, and that of pathological anatomy of the *Musée Dupuytren*. If these were all brought together under one roof, and somewhat compressed and re-arranged, we should have something in its nature resembling the Museum of which I am now speaking.

In this combination on one spot, and under one management, of so many diverse collections, we have a survival of a condition of scientific knowledge more characteristic certainly of the last century than of the one in which we live; but in this age of specialities, it is well perhaps to be reminded by such an institution of the essential unity of biological knowledge, and of the important illustrations which one branch of it may afford to another, especially when the detailed facts are to be combined for the purpose of philosophical generalization.

In visiting the Museum, and in the comparison which may be instituted between it and others of its kind, it is important to recollect this origin and history, as they will account for many shortcomings. It must not be forgotten that to its comparative antiquity (for it is certainly the predecessor and prototype of all the anatomical Museums of this country and of America, and to most of those on the Continent) is due many faults of construction and arrangement which should not be found in a building designed with the knowledge and experience of recent years. I have elsewhere pointed out what I consider the chief of these.*

Though the large size of the principal rooms allows of a fine *coup d'œil*, such a construction does not permit of that separation and distribution of the different series which is desirable for the purposes of study. Human anatomy, invertebrate zoology, and pathology, for instance, come into such near juxtaposition as to produce some confusion in the minds of strangers, though familiarity with the arrangement soon disperses the difficulties at first met with in finding the situation and limits of the particular department required. The narrowness and unprotected condition of the shelves in the galleries is also a radical defect now unfortunately irremediable. Furthermore, the indulgence of those who have the happiness to live elsewhere than in the absolute centre of a population of four millions of coal-burning people, must be asked for certain dusky results of such a situation, which no amount of care and expense can obviate.

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* *Journal of Anatomy and Physiology*, vol. ix., May, 1875.

I must now ask leave to be your guide to some of the contents of the Museum, as it is at present arranged, and will take the different branches of biology which are illustrated in it in some kind of order, beginning with the part which relates to life in a normal condition. Hunter's collection and observations were not limited to the animal kingdom. Wherever any physiological process could be illustrated by vegetable life, vegetables were pressed into the service, as may be seen in the physiological gallery, and by the Memoranda on Vegetation, left by him in MS. and printed by the College in 1860. In his collection were many portions of various recent plants, and a series, amounting to 184 in number, of fossil woods, fruits, and impressions of stems and leaves. These specimens, with some additions made in former years (for since the great development of the parts of the Museum more essential to the general purposes of the institution, it has been necessary to restrict the growth of such branches as are more fully and advantageously illustrated elsewhere) are arranged in the large wall-case on the right hand side (on going in) of the entrance door of the first or Western hall.

The zoology of invertebrate animals largely attracted Hunter's attention. Many of the treasures collected in the famous voyages of Captain Cook came into his possession through his friend, Sir Joseph Banks. He purchased, whenever opportunity offered, as at the sale of Mr. Ellis's famous collection of corals and zoophytes. In 1786, at the sale of the Duchess of Portland's museum, he bought for fifteen guineas, the fine *Pentacrinus* now in the Museum, of which very few examples had then been found. Of insects especially *Lepidoptera*, he had a large series. Of fossil invertebrates, as many as 2,092 specimens are now recorded in the catalogue as Hunterian. The series of fossil cephalopods is remarkably rich.

Such invertebrated animals as are dissected, or illustrate any special anatomical fact, are arranged in the so-called physiological series in the gallery, to be described presently, but beyond these there remained a vast number of specimens only showing external form, which by selection and arrangement have been lately formed into a special zoological collection, intended to introduce the student to a general knowledge of the principal forms of animal life, and to the mode in which they are grouped. This series, arranged in the floor cases on the left side of the Western Museum, includes selected specimens of nearly all the orders, and in many cases of the families, both of the living and extinct forms; illustrated both by their hard and imperishable parts as the "corals" or stony skeletons of the Actinozoa, the shells of Mollusca, and the tegumentary structures of the Articulata, and by the softer and more destructible parts of the bodies preserved in spirit. The various groups are distinctly separated from each other and clearly named. Students who desire to pursue the study of any of the sections more deeply than the small selected series of exhibited specimens will allow, will find the remainder of the specimens mentioned in the catalogues, arranged in drawers below the cases. The series does not extend beyond the invertebrata, as the peculiarities of the remaining classes of the Animal Kingdom are abundantly illustrated in other parts of the Museum.

Although locally far removed, occupying one portion of the upper gallery of the middle Museum, a small but interesting special collection, illustrating the subject of Helminthology, may be mentioned here. It was thought that the importance in a medical and social point of view of those animals which infest the interior of man and the principal domestic and other animals, justified a more extended exhibition of their modifications than could be assigned to any other group of animals of such inferior organization, and by the aid of the well-known helminthologist, Dr. Spencer Cobbold, the present collection was arranged and catalogued in 1866; the materials being mostly already in the collection, though scattered in other series or hidden in the store-rooms. The collection contains upwards of 200 specimens, and may still be somewhat extended. The intention is to show every parasitic animal which, under any circumstances, can affect the human body, and a selection of the principal types of those that inhabit the lower animals, especially such species as are associated with man. If increased beyond these limits, the collection would become interesting only to the student of detailed systematic zoology, and therefore not a legitimate object for our Museum.

I will pass next to the section of the Museum, which is, perhaps, altogether the most characteristic, and is certainly the most eminently Hunterian. It was specially the creation of his mind, is still arranged almost exactly as he left it, and, notwithstanding the very numerous additions, still contains a larger proportion of Hunterian specimens than any other department. This is the collection which is called *Physiological*, because the specimens in it are classified mainly according to their supposed function. Physiology, as we know it now, is scarcely a subject which can be illustrated in a Museum. The processes and actions which take place in the living body are not to be shown in bottles, but the organs, through the medium of which physiological processes are performed, can be, and it is these which are illustrated in this collection. It is more truly a collection of comparative anatomy, or morphology as we should now call it. It shows the variations in form which the different organs undergo either in different species, or in the same species under different conditions, as age and sex or season. Many of these modifications clearly have relation to function, as we see in the difference of form and relative size of the compartments of the stomach of the young ruminant, which is nourished by milk, and the adult which feeds on grass, the periodic variations in the size of the testis in birds, &c. But in a vast number more we can see no special adaptation to purpose, but merely variation, apparently for variety's sake. Look for instance at all the differences of the form of the liver throughout the mammalian series, which, as far as we know, have no relation to its action as a secreting gland. Though of little interest to the physiologist, modifications of this kind are of the highest importance to the morphologist. They throw light upon one of the great biological problems, classification, which, when rightly interpreted, means nothing more or less than a statement of the order in which living beings have been evolved one from another. From such variations of form most precious indications of the relationship of one animal to another can be obtained, and the less these variations are related to adaptation to some particular function, the better they can be relied on for this purpose. But Hunter's ideas were far different. He tried to bring together analogous parts according to their uses—organs of progressive motion adapted for flying—eyes modified for seeing in water—eyes modified for seeing in air, and so forth. Practically, such a system could not be logically carried out. Too many modifications of form were found to occur, to which no special modification of function could be assigned, a compromise had to be made, and in the large number of cases the organs had to be arranged according to the affinities of the animals to which they belonged—brains of fishes; brains of birds; brains of mammals, &c. As the collection continues to advance, the classification according to homology, is gradually superseding that according to analogy, with which it began.

This collection at present contains 6,982 specimens mounted in bottles, of which 3,745, or more than one-half are Hunterian. It may be convenient to know that these are distinguished by the figures upon them which refer to the catalogue, being painted in black. The specimens added since Hunter's time are lettered in red. The greater number of the former must be fully a century old, and being still in as perfect preservation as when first put up, afford a fair guarantee of the absolute permanence, with proper care, of specimens preserved in alcohol. The skill displayed in dissecting, injecting and mounting the majority of these preparations, has scarcely ever been surpassed in modern times, and this collection alone, if it were all that Hunter had left, would be a grand monument to his industry and zeal for anatomical knowledge; as is its valuable and instructive descriptive catalogue, published in five volumes, and completed in the year 1840, a lasting evidence of the same qualities on the part of Mr. Clift's eminent successor in the conservatorship of the Museum, Professor Owen.

Many points in comparative anatomy can be illustrated quite as efficiently, and more economically by dried preparations, which require neither spirit nor bottles to preserve them in. Though we have not attained in this country the art of making such preparations in the elegant and instructive manner pursued in several of the Museums in Italy, notably Pisa, and though nearly all the original Hunterian dried preparations have perished long ago, or become partially useless, there will still be found some worthy of attention in the rail cases round the galleries which contain the spirit preparation. While speaking of the contents of these cases I would specially call attention to the series showing the modifications of the small bones of the ear, throughout the mammalian class, arranged a few years ago by Mr. Alban Doran, one of the assistants in the Museum, which is probably not surpassed in extent or variety and method of arrangement anywhere else.

The Histological Collection is contained in a separate small room adjoining the physiological galleries, and consists of upwards of 12,000 specimens, illustrating the minute structure of the tissues of plants and animals, mostly prepared under the direction of Prof. Quekett, the third conservator of the Museum, who devoted the greater part of his life to this work. Since his death in 1861, it has been re-arranged and kept in order; but the additions have not been numerous, chiefly in consequence of the practical difficulties in exhibiting such a collection to visitors to a public Museum.

Although the anatomy of man naturally takes its place among that of other species in the Physiological series, the preparations illustrating it are chiefly confined to viscera—the details of regional anatomy, and of the arrangement and distribution of muscles, vessels and nerves, not finding a natural place in the scheme upon which that department of the museum was organized. It was, however, a few years ago, thought desirable that human anatomy, in consideration of its great importance to our profession, should be exhibited on a much more extended scale than it had been hitherto, and that a ready demonstration should be afforded by means of permanent preparations of the structure of all parts of the human frame. To those who have already learnt their anatomy, and who wish to refresh their memory, or verify a fact about which some passing doubt may be felt, or those who are precluded by circumstances from visiting the dissecting-room, the preparations of this series must prove of great value. The series of dissections already made with this end, commenced by a former able assistant in the Museum, Dr. J. Bell Pettigraw, and carried on to their present perfection by Mr. W. Pearson, are arranged on shelves over the floor cases on the western side of the western Museum, contiguous to the series of human osteology, to which they form the natural sequel.

No portions of the structure of vertebrate animals can be preserved with greater facility than the bones and teeth. Moreover, the skeleton being the framework around which the rest of the body is built up, gives, more than any other system, an outline of the general organization of the whole animal, and it has this special importance, that a large number of species—all those in fact which are not at present existing upon the earth—can be known to us by little beyond the form of the bones. Osteology has, therefore, always had many votaries, as a special branch of study, and it is one which finds much favour in the eyes of curators of Museums, from the satisfactory manner in which it can be illustrated by specimens. Hunter's osteological collection was considerable, quite in advance of any other in this country. The two small whales (*Balænoptera rostrata* and *Hyperoodon rostratus*) which formed part of it, were almost the only skeletons of animals of their order which existed in any Museum at the time of his death. This fact alone shows the marvellous change that has taken place within less than a century in the facilities for the study of comparative anatomy. How great the contrast to what may now be seen here in the College of Surgeons, in the British Museum, in Oxford, Cambridge, Edinburgh, Dublin, in a score or more of Museums on the European continent, in America, even in Australia and New Zealand! Richly supplied osteological collections have sprung up in every considerable centre of scientific culture over the world; but as ours was one of the first in point of time, we may also claim for it a high position in point of completeness. Others, such as that at the British Museum, the Jardin des Plantes at Paris, and the famous Leiden collection, may be larger, but this is because the College Museum has been designedly limited rather to selected illustrations of all the most important modifications of structure, than to numerous examples of closely allied species, which may be perfectly necessary in a purely zoological museum. When important forms have become extinct, their characters are shown by their fossilized remains, which, though at present most illogically arranged in a distinct room apart from their existing allies, will soon be incorporated in the general osteological series, where alone they can find a reasonable position in an anatomical museum.

The value of a collection is not to be estimated only by the number of specimens it contains, nor by even their rarity or judicious selection, but also by the condition of the specimens, and the facility by which they may be made available for study and reference. On this head we claim to be somewhat in advance of other Museums, on account of the improvements which have been made in late years in preparing and articulating entire skeletons, and displaying portions of the bony framework in an instructive manner. Formerly all the bones were rigidly fixed together, so that their articular surfaces, if not actually destroyed, were completely concealed; and no bone could possibly be removed and separately examined. The aim of a series of changes in the method of mounting skeletons introduced here, and now adopted more or less completely in many other Museums, (the details of which were carried out with great skill by our late able articulator, Mr. James Flower) has been to obviate all these difficulties, and to make each bone, as far as possible, independent of all the rest, while preserving the general aspect and form of the entire skeleton.

Another improvement in the osteological series introduced within the last twenty years, has been the formation of a special collection designed to show the principal modifications of each individual element of the skeleton throughout the vertebrate classes, by placing the homologous bones of a number of different animals in juxtaposition. For convenience of comparison, the specimens of this series are all placed in corresponding positions, mounted on separate stands, and to each is attached a label bearing the name of the bone, and the animal to which it belongs. This series is especially instructive to the students of elementary osteology, and forms an introduction to the general series.

As in other departments of the Museum, the more nearly man is approached in structure, the more complete do the illustrations of anatomical modification become, and, as might be expected, the osteology of man is far more thoroughly shown than that of any other species. The specimens of human osteology (of which a revised catalogue, enumerating 1,306 specimens, was published two years ago) begin by illustrations of the development of the bones; these are followed by the normal skeleton, exhibited under various aspects, then by individual variations, among which may be mentioned one of the most remarkable objects in the museum, the skeleton of the celebrated Irish giant, O'Brian, who died in London in 1783, and about the preservation of whose remains so many legends are told in the biographies of John Hunter. Finally, the special osteology of man or illustrations of the osteological characters of the various races of mankind. In this important subject Hunter was a long way in advance of most of his contemporaries, as the origin of his collection dates almost, if not quite, as far back as that of the founder of physical anthropology, the celebrated Blumenbach. The series has been greatly augmented of late years, and completely rearranged, and the splendid addition made to it last year by the purchase of the great private collection of the late Dr. Barnard Davis, has brought it up in point of completeness to truly national importance.

As forming a transition from the department of normal anatomy and physiology to that of pathology, may next be mentioned the teratological series, or collection of congenital malformations of man and the lower animals, which necessarily forms part of every general biological Museum. This difficult, mysterious—and as far as the light it throws upon the workings of the laws of nature—still unsatisfactory subject, had considerable attraction for Hunter, and many of the specimens in the series form part of his Museum. It has been steadily, though not very rapidly increasing ever since, and had the advantage a few years ago, of being thoroughly revised, rearranged, and catalogued by Mr. B. T. Lowne. It is arranged in the upper gallery of the middle Museum.

The pathological series is the section of the Museum, to the study of which in the eyes of Hunter and his successors all the others form an introduction. It occupies the whole of the two galleries and part of the ground floor of the western hall. As the Museum of the College differs from those attached to the various medical schools, in having no hospital or *post-mortem* room in connection with it, from which to draw the supplies for completing this collection, it has been increased by the acquisition from time to time, when opportunity afforded, of various private collections, as those of Mr. Heaviside in 1829, Mr. Langstaff in 1835, Mr. Howship and Mr. Taunton in 1841, Mr. Liston in 1842, and Sir Astley Cooper in 1843, obtained by purchase; and the collections of Sir William Blizard in 1811, Sir Stephen Love Hamminck in 1851, and Dr. Peacock in 1876, presented to the College. Contributions of recent specimens are also constantly received from numerous individual donors, the acquisitions from this source having greatly increased of late years. The total number of specimens now in the catalogue amounts to 5,148, of which 1,672 are Hunterian. As in the physiological galleries, the latter are distinguished by their numbers being painted in black. The descriptive catalogue of this series, written by Sir James Paget, and published in five quarto volumes between the years 1846 and 1849, is one of the best-known and most valuable of all the publications of the College, and has always been looked upon as a model upon which other pathological catalogues should be formed. The additions made to the collection since that time have been so numerous that the necessity of a new catalogue has long been felt. Under these circumstances, it is a matter of great congratulation to all who are interested in the welfare of this valuable collection, that the author of the original catalogue has undertaken, with the co-operation of Dr. Goodhart and Mr. Doran, to make a new one, in which the old descriptions will be revised, the new specimens incorporated in their appropriate places, and such changes introduced into the general arrangement as the advance of pathological knowledge and greater experience of the requirements of the Museum appear to necessitate. This great work, especially arduous for one so much engaged in professional avocations as Sir James Paget, is now far advanced. The prospect of its early completion will doubtless compensate the members of the Congress who will make an inspection of this part of the collection, for the transitional and somewhat disarranged condition in which they will find it on their present visit.

As adjuncts to the general pathological series are certain special collections, which have separate catalogues devoted to them. One, which will be examined with interest by those devoting themselves to aural pathology, is the series of preparations illustrative of diseases of the ear, formed by the late Mr. Joseph Toynbee; which came into possession of the College at his death in 1866. It is a large and probably unique collection of 824 specimens, illustrating all the known morbid conditions of the organ of hearing, such as could only have been brought together by one specially engaged for a considerable number of years in investigating this branch of surgery, and the value of which is greatly enhanced by a complete descriptive catalogue, published during Mr. Toynbee's lifetime. This series is arranged in part of the rail cases of the lower pathological gallery in the Western Museum. The remainder of the same cases are devoted to the collection of urinary calculi and other concretions, salivary, biliary, and intestinal, both from man and various animals, probably the most complete and best arranged in the world. The careful chemical analysis and description of the whole of these specimens has been the work of Mr. Thomas Taylor.

In a corresponding position in the upper gallery of the same Museum is the Dermatological collection, consisting of an extensive series of beautifully executed models, of actual specimens, casts and drawings illustrating the various affections of the skin. This collection was commenced in the year 1870, the whole of the specimens in it, the cases which contain them, and the catalogue describing them having been presented to the College by Mr. Erasmus Wilson, at that time Professor of Dermatology in the College.

Lastly, must be mentioned a collection—for the reception of which a separate room, approached from the end of the Eastern Museum, was devoted, in 1870—of surgical instruments and appliances, which, though small at present, contains many instruments curious for their antiquity, or interesting for their associations, and doubtless, now that a convenient and appropriate locality has been established for their reception and preservation, will be gradually augmented by additions of a similar nature. It is mainly to the interest taken in the subject which it illustrates by the late Sir William Fergusson that the establishment of this collection is due.

Such is a general outline of the history and contents of the Museum which, for eighty years the College of Surgeons has maintained for the benefit not only of its own members, but for that of the Profession at large, and indeed of all who take any interest in biological science, whether the young student preparing for his examination, or the advanced worker who has here found materials for many an important contribution by which the boundaries of knowledge have been materially enlarged. To all such it is freely open without any fee or charge. Even the written or personal introduction of members, still nominally required, is never asked for on the four open days from any intelligent or interested visitor; and on the one day of the week in which it is closed for cleaning, facilities are always given to those who are desirous of making special studies, and to the increasing number of lady students, whether artistic, scholastic, or medical. Artists continually resort to the Museum, to find opportunities of studying the anatomy of man and animals, which no other place in London affords; and of late years it has been the means of a still wider diffusion of knowledge, by the visits which have been organized on summer Saturday afternoons by various associations of artizans, to whom a popular demonstration of some part of its contents is usually given on each occasion by the conservator.

If the knowledge of organic nature is of any value to man, and this is a proposition which I am sure all who attend this Congress will admit, as on such knowledge the whole superstructure of their profession is built, there can be no question but that such an institution as I have here sketched out, must be one of pure and simple benefit. Its maintenance has been a worthy object, upon which the College has spent its care and its money, and whatever may be the changes which impending legislation may effect in the organization of the profession, we may all hope that the great work begun by John Hunter, and carried on by those who, under the guidance and support of the Council of the College, have followed him in the care of the collection, may not be impaired or destroyed. Whether the whole of the charges of maintaining such a Musuem in all its parts on a continually extending scale, should be the duty of one institution, like the College of Surgeons, or even of one profession, may be a question for future consideration; but, in the meantime, how easily could its preservation and future extension be rendered entirely independent of all the chances and changes of medical education and legislation, or even of Government assistance and interference! When we see the immense sums voluntarily provided every year in this country by donation and bequest; when we see, and see with pleasure and gratitude through the length and breadth of the land, cathedrals, churches, chapels, colleges, schools, hospitals, and asylums founded, endowed, enlarged, and restored, may we not hope that an old and tried institution like ours, will not be so entirely neglected as it has hitherto been by members of our profession in search of some means for the disposal of any surplus wealth they may possess. Few objects can be so surely productive of good, so little liable to abuse at any future time, as the preservation, augmentation, and maintenance of a Museum, in which the facts of the beautiful and wonderful world around us, are displayed for the instruction of mankind.